DR-39. SURFACE ELECTRICAL POTENTIAL OF ZrO_2–SiO_2 BINARY XEROGELS BY EPR pH-SENSITIVE SPIN PROBES

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Binary systems ZrO_2 – SiO_2 are of interest as thin-film coatings, selective sorbents, catalysts, and their carriers [1–4].

Previously [5], it was shown that the materials based on silica and zirconia synthesized by the sol-gel technology in a water-ammonia atmosphere are highly porous, have a developed specific surface, and also exist in these materials as individual phases ZrO_2 and SiO_2, and the mixed phase Zr–O–Si.

Also, for catalysis, the acidity of the medium plays an important role, but the pH of the external solution may differ from the pH of the solution inside the pores and near the surface of the catalyst. The reasons for these differences can serve as their own surface charge, as well as a change in the properties of water located near the surface.

Therefore, the purpose of this work is to assess the electric potential of the surface of mixed ZrO_2 – SiO_2 xerogels and to study the changes in the acidity near these surfaces.

We performed a qualitative assessment of the surface electrical potential for individual and binary xerogels based on silica and zirconia which were synthesized by hydrolysis in aqua ammonia medium. The effect of surface charge on near surface local acidity of solid-phase compositions was studied.

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